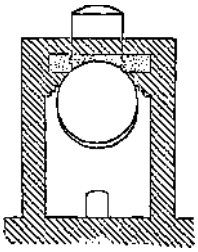
some of the useless and erroneous forms of boiler setting and baffling which are given as " good " construction in *Hutte* are shown below. These will very clearly indicate the ideas which the author is endeavoring to set forth.

Fig. 77 shows a single-drum cylindrical boiler as illustrated upon page 865 of the first volume of the French translation of *Hutte* (edition of 1911).

Fig. 78 shows the correct method of setting the same boiler. All of the baffling which was supposed to force the hot gases to travel in a zigzag path has been eliminated. The hot gases, being light, have a tendency to rise and apply themselves to the shell of the boiler. Any constrictions of their path have a detrimental effect, as they tend to increase the



velocity of flow. In order to

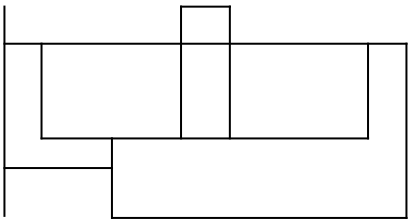


FIG. 78.

increase the time during which the heated gases remain in contact with the boiler after leaving the firebox, the waste gas outlet has been dropped as far as possible by lowering the hearth of the gas chamber behind the bridge wall.

(Note by English translator:—This setting would be greatly improved by placing the grate and firebox in a separate setting where the mixing gases would not be chilled below the ignition point.)

The circulation of the gases in a boiler set in this way is effected in the following manner: The boiler will

be constantly bathed by the hottest gases which tend to rise to the highest part of the setting. As these gases are cooled they will drop lower and lower by reason of their increase in weight while cooling. They will finally, at their lowest temperature, fall to and pass out through the waste gas outlet.

In order to avoid detrimental eddy currents it is necessary to